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To: Examiner J. Pezzlo**From:** Glenn E. Forbis / Diane R. Lytle**Fax:** 703-746-5894**Pages:** 2 + Coversheet**Phone:****Date:** February 3, 2004

Re: Application No. 09/617,816 filed July 17, 2000 entitled "Telephony Communication Via Varied Redundant Networks; Attorney Docket No. 00-VE03.13 (65632-0065)

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● **Comments:** Examiner Pezzlo, Per our conversation, attached please find an attachment to the Office Action filed on 1/20/04 for the above-referenced application. Thank you for your assistance. Diane



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INTEGRATED SERVICES DIGITAL NETWORK

Computing Dictionary

Definition: (ISDN) A set of communications standards allowing a single wire or optical fibre to carry voice, data services and video. ISDN is intended to eventually replace the plain old telephone system.

ISDN was first published as one of the 1984 ITU-T Red Book recommendations. The 1988 Blue Book recommendations added many new features. ISDN uses mostly existing Public Switched Telephone (PSTN) switches and wiring, upgraded so that the basic "call" is a 64 kilobits per second, all-digital channel. Packet and frame modes are also provided in some places.

There are different kinds of ISDN connection of varying bandwidth (see DS level):

DS0	=	1 channel	PCM at	64 kbps
T1 or DS1	=	24 channels	PCM at	1.54 Mbps
T1C or DS1C	=	48 channels	PCM at	3.15 Mbps
T2 or DS2	=	96 channels	PCM at	6.31 Mbps
T3 or DS3	=	672 channels	PCM at	44.736 Mbps
T4 or DS4	=	4032 channels	PCM at	274.1 Mbps

Each channel here is equivalent to one voice channel. DS0 is the lowest level of the circuit. T1C, are rarely used, except maybe for T2 over microwave links. For some reason 64 kbps is never used.

A Basic Rate Interface (BRI) is two 64K "bearer" channels and a single "delta" channel ("2B+D") Rate Interface (PRI) in North America and Japan consists of 24 channels, usually 23 B + 1 D channels. The same physical interface as T1. Elsewhere the PRI usually has 30 B + 1 D channel and an E1 interface.

A Terminal Adaptor (TA) can be used to connect ISDN channels to existing interfaces such as E1, V.35.

Different services may be requested by specifying different values in the "Bearer Capability" field setup message. One ISDN service is "telephony" (i.e. voice), which can be provided using less than 64 kbps bandwidth (64 kbps would provide for 8192 eight-bit samples per second) but will require some special processing or bit diddling as ordinary PSTN calls. Data calls have a Bearer Capability of "unrestricted".

ISDN is offered by local telephone companies, but most readily in Australia, France, Japan and Sweden with the UK somewhat behind and availability in the USA rather spotty.

(In March 1994) ISDN deployment in Germany is quite impressive, although (or perhaps, because) specifically German signalling specification, called 1.TR.6. The French Numeris also uses a non-standard

protocol (called V4; the 4th version), but the popularity of ISDN in France is probably lower than Germany, given the ludicrous pricing. There is also a specifically-Belgian V1 experimental system of Europe is now phasing in Euro-ISDN.

See also Frame Relay, Network Termination, SAPI.

FAQ.

Usenet newsgroup: news:comp.dcom.isdn.

See Also: communications